



State of Illinois

ENVIRONMENTAL PROTECTION AGENCY

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Refer to: L1630200005 -- St. Clair County
Sauget Area 1 Sites - Sauget
Superfund/Technical Reports

December 12, 1997

Mr. D. Michael Light
Manager, Remedial Projects
Solutia, Inc.
10300 Olive Boulevard
St. Louis, Missouri 63136-6760

Dear Mr. Light:

Pursuant to conversations with my attorney after our conference call today, I am submitting for your information the Statement of Work for a Remedial Investigation and Feasibility Study (RI/FS) at the Sauget Area 1 Sites. This Statement of Work (SOW) will be an attachment to an RI/FS Consent Decree which is undergoing internal review. Solutia will be provided with this Consent Decree as soon as our reviews have been completed some time after Christmas.

If you have questions about the attached SOW, please do not hesitate to call me. I will be the contact person for negotiations on this document.

Yours Truly,

Paul E. Takács, Project Manager
National Priorities Unit
Division of Remediation Management
Bureau of Land

cc: Terry Ayers
Chris Perzan (w/o attachment)
James Morgan, IAGO (w/o attachment)
Leah Evison, U.S. EPA
Division File

**STATEMENT OF WORK
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY**

**SAUGET AREA 1 SITES
SAUGET & CAHOKIA, ILLINOIS**

I. PURPOSE

The purpose of this Statement of Work (SOW) is to set forth the requirements for conducting a Remedial Investigation/Feasibility Study (RI/FS) that will assist the Illinois Environmental Protection Agency (Illinois EPA) in selecting a remedy that will eliminate, reduce, or control risks to human health and the environment at the Sauget Area 1 proposed NPL site (Site). This SOW is designed to provide the framework for conducting RI/FS activities at the Site that will in turn allow for the development of data necessary to support the selection of a site remediation approach. Solutia, Inc. (Solutia), acting on behalf of Monsanto Company, will conduct the RI/FS in accordance with this SOW and all other relevant United States Environmental Protection Agency (U.S. EPA) guidance and Illinois EPA guidance used in conducting an RI/FS. All personnel, materials, and services required to perform this RI/FS will be provided by Solutia.

II. TASKS TO BE PERFORMED

Solutia will perform the tasks described below, according to the schedule found in Section III of this SOW.

**TASK 1 - PREPARE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)
WORKPLAN**

Within 60 days of the effective date of this Consent Decree, Solutia will prepare and submit an RI/FS Workplan for the Site that details the technical approach, personnel requirements, and schedule for each task described in this SOW. Solutia will incorporate the following specific plans into this Workplan:

A. Field Sampling Plan

The Field Sampling Plan will define the sampling and data collection methods that will be used for the RI/FS. The plan will include sampling objectives; sample locations and frequency; sampling equipment and procedures; and sample handling and analysis for all data acquisition activities at the Site as well as off-Site properties. The plan will consider the use of all existing data insofar as they are useable.

B. Quality Assurance Project Plan

Solutia will prepare a Quality Assurance Project Plan (QAPP) in accordance with the most recent U.S. EPA QA/R-5 guidance. The QAPP will describe project objectives and organization, functional activities, and quality assurance/quality control (QA/QC) protocols that will be used to achieve the desired Data Quality Objectives (DQOs). DQOs will, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels for remedial action objectives identified in the National Contingency Plan (NCP).

C. Health and Safety Plan

Solutia will develop a Health and Safety Plan that specifies employee training, protective equipment, medical surveillance requirements, standard operating procedures, and a contingency plan in accordance with 40 CFR 300.150 of the NCP and 20 CFR 1910.120 (1)(1) and (1)(2). The health and safety plan will also provide information on provisions to protect site visitors and the surrounding community during site investigation activities.

TASK 2 - SITE INVESTIGATIONS

A. Investigative Support

Solutia will conduct site surveys that include current property ownership, property boundary delineations, utility rights-of-way and topographic information relative to each source area and all areas where sampling will be conducted. Solutia will assemble a legal description of the Site from existing county and township records and the results of this site survey will be incorporated into the RI report. Solutia will make all necessary arrangements to guarantee access to the Site and surrounding property parcels as necessary for conducting the site investigation. Solutia will initiate and implement necessary arrangements to construct support facilities and/or procure equipment necessary to performing the RI/FS. This includes preparation of decontamination facilities, utility hook-ups, and site access control stations.

B. Site Investigations

Solutia will conduct site investigations as necessary to complete characterization of the Site that was initiated by earlier studies performed primarily by Illinois EPA, U.S. EPA, Monsanto Chemical Company and Cerro Copper Products, Inc. The site investigation will follow the plans set forth in Task 1. At a minimum, the investigation will include those items described below:

The analytical parameters list used in the site investigation will be based on existing data where it is available. Where possible, the selection of parameters or classes of parameters (i.e., semivolatile organics, metals, PCBs/pesticides, etc.) will be based upon their known source concentrations and their persistence and mobility within the most likely pathway of migration. Provisions will be made for conducting full Hazardous Substance List analyses at those monitoring stations (e.g., groundwater monitoring wells) where there is a reasonable anticipation

of detecting a complex contaminant profile. All samples will be collected, handled, and analyzed in accordance with the protocols and procedures described in the approved site QAPP.

1. Source Characterization

Solutia will conduct a thorough source characterization to investigate physical and chemical aspects of the source materials and the materials in which they are contained at the Site. The characterization of these source areas will involve obtaining data relative to type, concentration and quantity of the waste materials present at each source area. Solutia will be responsible for determining site characteristics that relate to the type and integrity of existing source "containment" and drainage control at each source area. This source characterization may overlap with certain aspects of the hydrogeologic investigation noted below.

Solutia will obtain source information from existing site studies, field inspection reports, and site sampling activities specified in the finalized RI/FS Workplan. Source characterization techniques will include, but are not limited to surface/subsurface soil sampling, soil gas sampling, geophysical investigations, the construction of test pits and surface water sampling.

2. Hydrogeologic Investigation

Solutia will conduct a hydrogeologic investigation to further evaluate the subsurface geology and characteristics of the water bearing formations at and around the Site. The results of this study will be combined with existing site data and the results of the source characterization to define groundwater flow patterns and the vertical and lateral extent of contaminant migration. This investigation will also utilize computer groundwater modeling that will predict the long term vertical and lateral disposition of groundwater contaminants.

3. Dead Creek Sediment Investigation

A thorough investigation of contaminated sediments at all segments of Dead Creek will be conducted by Solutia to evaluate the type, concentration and volume of contaminated sediment. Similar in scope to the source characterization noted above, this investigation will also utilize data collected in previous investigations conducted mainly by Illinois EPA, U.S. EPA and Monsanto. Solutia will also evaluate current and historical drainage patterns that exist within Dead Creek and the potential for erosional transport within the creek.

4. Off-Site Soils Investigation

With respect to surface soils at residential, agricultural and industrial properties adjacent to the Site, Solutia will be responsible for an off-site soils investigation that will delineate the lateral extent and nature of Site-related contamination that has migrated from the Site. These concentrations will, in turn, be compared to contaminant concentrations found in both the source and sediment investigations discussed above. This investigation will also determine appropriate background contaminant concentrations that exist beyond the Site boundaries.

TASK 3 - REMEDIAL INVESTIGATION REPORT

Solutia will prepare and submit a report documenting activities mentioned in Task 2 of this SOW. This report will be referred to as the Remedial Investigation (RI) Report and is discussed below:

The RI report will accurately establish the Site characteristics such as media contaminated, extent of contamination, and the physical boundaries of the contamination. Pursuant to this objective, Solutia will obtain the necessary amount of detailed data necessary to determine the nature and extent of contamination. Primary contaminants that will be discussed in the RI report must be selected based on their persistence and mobility in the environment as well as their degree of hazard.

The RI Report will include the following information:

- Introduction: Site Description, Study Area History and Report Organization
- Methods & Procedures
 - Field Investigation Techniques and Procedures
 - Chemical Analysis and Analytical Methods
- Site Characteristics
 - Regional Geology
 - Regional Hydrogeology
- Site Investigation Results
 - Source Characterization
 - Geophysical Investigation
 - Soil Gas Sampling
 - Surface Water Sampling
 - Surface Soil Sampling
 - Subsurface Soil Sampling
 - Test Pit Sampling
 - Hydrogeologic Investigation
 - Monitoring Well Sampling
 - Groundwater Modeling
 - Dead Creek Sediment Investigation
 - Off-Site Soils Investigation
- Fate and Transport
 - Contaminant Characteristics
 - Transport Processes
 - Contaminant Migration Trends
- Summary and Conclusions.

The report will be submitted in draft form for review and comment. Upon receipt of comments, a draft final report will be prepared and submitted. The RI report will not be considered final until a letter of approval is issued by the Illinois EPA Project Manager.

Solutia will perform an analysis of all data collected during the site investigation to assure that the quality (e.g., QA/QC procedures have been followed) and quantity of data adequately support the Risk Assessment, which will be prepared and finalized by Illinois EPA (and conducted in accordance with procedures described in Risk Assessment Guidance for Superfund, EPA/540/11-89-002, December 1989), and the Feasibility Study. Solutia will organize and clearly present the results of the site investigation in the RI report.

TASK 5 - REMEDIAL ALTERNATIVES EVALUATION

A. Initial Screening

Solutia will investigate appropriate hazardous waste management alternatives that would remediate or control contaminated media remaining at and around the Site (e.g., soil, surface water, ground water, sediments) to provide adequate protection of human health and the environment and to address Site-related flooding problems. Potential alternatives should encompass, as appropriate:

- (1) A range of alternatives in which treatment is used to reduce the toxicity, mobility, or volume of wastes but vary in the degree to which long-term management of residuals or untreated waste is required,
- (2) One or more alternatives involving containment with little or no treatment; and
- (3) A no-action alternative.

Alternatives involving minimal efforts to reduce potential exposures (e.g., site fencing, deed restrictions, etc ...) should be presented as "limited action" alternatives.

Solutia will prepare a draft Alternatives Screening section of the Feasibility Study (FS) that presents the potential alternatives and includes the following information:

- Establish Remedial Action Objectives. Based on existing information, Solutia will identify site-specific remedial action objectives which should be developed to protect human health and the environment. These objectives will specify the contaminants and media of concern, the exposure routes and receptors, and an acceptable contaminant level or range of levels for each exposure route (i.e., preliminary remediation goals).
- Establish General Response Actions. Solutia will develop general response actions for each medium of interest by defining containment, treatment, excavation, pumping, or other actions, singly or in combination to satisfy remedial action objectives. Proposed response actions should take into account requirements for protectiveness as identified in the remedial action objectives and the chemical and physical characteristics of the Site.

- **Identify & Screen Applicable Remedial Technologies.** Solutia will identify and screen technologies based on the developed general response actions. Hazardous waste treatment technologies should be identified and screened to ensure that only those technologies applicable to the contaminants present, their media, and other site characteristics will be considered. This screening will be based primarily on a technology's ability to effectively address the contaminants at the Site, but will also take into account a technology's implementability and cost. Solutia will select representative process options, as appropriate, to carry forward into a detailed analysis. Solutia will also identify the need for treatability testing for technologies that are probable candidates for consideration during the detailed analysis.
- **Develop Remedial Alternatives in accordance with NCP.**
- **Screen Remedial Alternatives for Effectiveness, Implementability, and Cost.** Solutia will screen alternatives to identify potential technologies or process options that will be combined into media-specific or sitewide alternatives. The developed alternatives will be defined with respect to size and configuration of the representative process options; time for remediation; rates of flow or treatment; spatial requirements; distances for disposal; and required permits, imposed limitations, and other factors necessary to evaluate the alternatives.

Within 45 days after receipt of Illinois EPA comments on the draft Alternatives Screening section of the FS, Solutia will submit a revised Alternative Screening section.

B. Detailed Evaluation

Following approval of the Alternatives Screening section of the FS by Illinois EPA, Solutia will conduct a detailed evaluation of alternatives for incorporation into the FS report discussed in Task 6, but not as a report deliverable. This evaluation will include: (1) a technical description of each alternative that outlines the waste management strategy involved and will identify key ARARs associated with each alternative; and (2) a discussion that profiles the performance of that alternative with respect to each of the evaluation criteria. Solutia will include a table summarizing the results of this analysis. The evaluation criteria are as follows:

Overall Protection of Human Health and the Environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Compliance with ARARs addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.

Long-Term Effectiveness and Permanence refer to the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.

Reduction of Toxicity, Mobility, or Volume Through Treatment is the anticipated performance of the treatment technologies a remedy may employ.

Short-Term Effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

Cost includes estimated capital and operation and maintenance costs, and net present worth costs.

Support Agency Acceptance addresses the technical or administrative issues and concerns the support agency (i.e., U.S. EPA) may have regarding each alternative.

Community Acceptance addresses the issues and concerns the public may have to each of the alternatives.

TASK 6 - FEASIBILITY STUDY REPORT

Pursuant to the schedule outlined in Section III of this SOW, Solutia will develop and submit an FS report consisting of a detailed analysis of alternatives and cost-effectiveness analysis in accordance with NCP 300.68(h)(3)(i)(2). The report will contain a summary of alternative remedial actions in accordance with Chapter 3, NCP 300.68(h)(3)(i)(2)(A); 2) Cost Analysis in accordance with Chapter 7, NCP 300.68(h)(3)(i)(2)(B); 3) Institutional analysis in accordance with Chapter 4, NCP 300.68(h)(3)(i)(2)(C); 4) Public-health analysis in accordance with Chapter 5, NCP 300.68(h)(3)(i)(2)(D); 5) Environmental analysis in accordance with Chapter 6, NCP 300.68(h)(3)(i)(2)(E).

The FS Report will contain the following:

- Summary of FS Objectives
- Summary of Remedial Action Objectives
- General Response Actions Listing/Description
- Identification & Screening of Remedial Technologies
- Remedial Alternatives Description
- Detailed Analysis of Remedial Alternatives. Solutia's technical feasibility considerations shall include a careful study of problems that may prevent a remedial alternative from mitigating site problems. Therefore, the site characteristics from the RI must be kept in mind as technical feasibility of the alternative is studied. Specific items to be addressed are reliability (operation over time), safety, operation and maintenance, ease with which the alternative can be implemented, and time needed for implementation.
- Summary and Conclusions

The FS will be submitted to the Illinois EPA in draft form for review and comment. After receipt of Illinois EPA comments, a draft final report will be prepared and submitted pursuant to the schedule in Section III of this SOW. The FS will not be considered final until a letter of approval is issued by the Illinois EPA Project Manager.

TASK 7 - COMMUNITY INVOLVEMENT SUPPORT

Solutia will cooperate with Illinois EPA in their community involvement program. Solutia will, at the expressed request of Illinois EPA, participate in the preparation of information distributed to the public, such as fact sheets, and in public meetings that may be held or sponsored by the Illinois EPA to describe activities at, or concerning, the site, including the findings of the RI/FS. Solutia's community involvement support will be consistent with Superfund policy as stated in Community Relations in Superfund - A Handbook, June 1988.

TASK 8 - MONTHLY PROGRESS REPORTS

Solutia will submit monthly progress reports from the effective date of the Consent Decree to the completion of all tasks in this SOW. These reports will be submitted to Illinois EPA by the tenth business day of each month. Monthly progress reports will include the following information:

- All sampling and testing results and all other raw data produced during the month pursuant to the implementation of the Consent Decree;
- A description of activities completed during the past month pursuant to the Consent Decree, as well as such actions and plans that are scheduled for the next month pursuant to the Consent Decree;
- A description of difficulties encountered during the reporting period and the actions taken to rectify the problems;
- Target and actual completion dates for each element of activity, including the project completion, and an explanation of any deviation from the schedules provided in the RI/FS Workplan; and
- Changes in key personnel.

III. SCHEDULE OF MAJOR DELIVERABLES

Deliverable	Deadline
Draft Workplan	60 days after effective date of the Consent Decree
Final Workplan	45 days after receipt of Illinois EPA comments on the Draft Workplan
Draft RI Report	120 days after completion of field sampling activities pursuant to the final Workplan (and following approved Workplan addenda, if applicable)
Final RI Report	45 days after receipt of Illinois EPA comments on the Draft RI Report
Alternatives Screening section of the FS	45 days after completion of the Risk Assessment
Draft FS Report	30 days after approval of Alternatives Screening section of the FS
Final FS Report	45 days after receipt of Illinois EPA comments on the Draft FS Report
Monthly Progress Reports	10th business day of each month